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**On the "List of Pteridophyta and Spermatophyta of Northeastern America," prepared by the Nomenclature Committee of the Botanical Club.**

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In the discussions of the botanical nomenclature at the Rochester meeting of the American Association there was a decided feeling upon the part of many that more exact data were requisite to any satisfactory action. A series of rules was provisionally adopted and it was wisely urged that before the merits of the code could be estimated it would be necessary to see its application to some considerable part of our flora. Prof. Britton, at much expense of time and trouble, with the assistance of some others, has prepared under the above title a list of the flowering plants of the eastern states and Canada, selecting the names according to the Rochester code and its modification at Madison. This list possesses considerable interest, as it contains the expression of the latest phase of nomenclature reform in America and affords a much more satisfactory basis for the decision of the questions at issue than has hitherto been gained from vague generalizations and isolated instances.

In estimating the system of nomenclature illustrated by this list all considerations of sentiment may be passed with brief mention. It is natural that every working botanist should greatly regret giving up names long associated with certain plants, but there would certainly be few who would not make all due concession in this regard if really assured of a stable nomenclature as a reward of their sacrifices. Before leaving the matter of sentiment, however, it may be noted that it has not been confined to the conservative botanist, who regrets the proposed displacement of established names. It is equally exhibited by the reforming botanist, who maintains that he is impelled to make these changes by justice to the earlier authors. For slight examination shows that this idea of justice is often of the sentimental rather than the practical sort. The revival of old and obscure names undoes in many instances the most careful work of subsequent authors, and this, too, from no fault of theirs, for the rules affecting their

work were not invented until many years after its publication. Certainly this is a robbing Peter to pay Paul principle of justice. That there have been many cases of arbitrary change and consequent injustice in the past no one will deny, but it is very doubtful whether these injuries can be righted at present by making more arbitrary changes. Certainly the reform exhibited in the present list does not altogether tend to perpetuate the older combinations of the injured authors, but much more to the renaming of a considerable portion of our flora and the forming of a multiplicity of entirely new combinations with new authorities. But passing these considerations, which as they do not directly affect the practical side of nomenclature may perhaps be regarded as sentimental, we come to the more important question: Is the new system one which possesses the elements of permanency?

It is one of the principal arguments for the stability of the proposed code that it is a *rigid* one, which permits no exceptions and, to use an expression of a leader in nomenclature reform, "leaves nothing to individual judgment." It is well-known, however, to every working botanist that even the selection of the first specific name, after the still more difficult choice of the generic, involves a constant exercise of judgment of the most critical sort, both as regards the exact application of brief and unsatisfactory descriptions and the often doubtful priority of publications. Even the form of the name is sometimes subjected to individual judgment or arbitrary modification in the new system as well as the old, as an illustration will show. It has occurred to a number of writers that the sweet alyssum, common in cultivation, should be separated as a distinct genus. The history of its synonymy is as follows: Upon page 420 of his *Familles des Plantes*, in 1763, Adanson sets up the genus *Konig*, founded upon *Clypeola maritima* L. (*Alyssum maritimum* Lam.), with little description and largely by referring by number to the species of Linnaeus. In 1814 Desvaux, also of the opinion that the Lamarckian *Alyssum maritimum* should be separated from the other alyssums, carefully described it under the correctly latinized name *Lobularia*. In 1826, Robert Brown revived the name *Konig*, modifying it to *Koniga* and dedicating the genus to a friend, then curator of the British Museum, whose name by a strange chance was *Konig* (anglicized from *König*). In 1891, Prof. Prantl, revising the CRUCIFERÆ for the *Nat. Pflanzenfamilien*,

wisely selects as the correct designation of the genus the first properly latinized name *Lobularia*. Now Prof. Britton takes a rather singular course by pronouncing Adanson's *Konig* a misprint for *Koniga*. This action is entirely unwarranted by fact, both from the circumstance that *Konig* occurs in same form several times in Adanson's work and on account of that author's well-known disregard for latinization. Prof. Britton takes this as an entirely arbitrary expedient for setting up a name which would otherwise from its uncouth form be deservedly neglected. But what must be the outcome of such arbitrary actions as this? Is nothing here left to individual judgment? How can Prof. Britton be sure that *Konig* is a misprint for *Koniga* and not for *Konigus*, *Konigium* or *Koniganthus*? Is it likely that other authors will agree upon this point? But this is not all. If Prof. Britton may coin from an unlatinized word a generic name, how may an erratic writer be prevented from taking up any vernacular name from English or German, Dutch or Russian, if having discovered its use in some work of the last century he only pronounces it a misprint, and by the ready addition of an *us*, *a*, or *um* uses it to displace a later generic name? A system which upon the precedent of its chief exponent permits such vagaries as this is certainly not likely to have the desired stability.

The choice of *Koniga* as the earliest generic name is noteworthy as illustrating another point. It will be remembered that at Madison special legislation was demanded and secured to establish the so-called principle of priority by position, according to which if two genera or two species are published in the same work and subsequently united, the name standing first in the book is the authorized one, there being no difference in the time of publication. Now although *Konig* is used on the 420th page of Adanson's work to designate the sweet alyssum, that author states in an erratum that the reader is to substitute for *Konig*, *Aduseton*. A radical reformer might, it is true, refuse to Adanson the right to take back a name once published, but the peculiar feature of this case is that the errata of this work, while doubtless written after its completion, have been uniformly bound in front of the regularly numbered pages; at least such is the case in the three copies of the work accessible to the writer. Thus Adanson's correction, advocating *Aduseton*, has many pages of what Prof. Britton has termed priority of position over the description of *Konig*.

The case is interesting merely as a good instance of many in which zeal in searching for the earliest designation leads to the consideration of names so involved that several interpretations are equally possible. In passing it may also be noted that Prof. Britton's *Koniga maritima* is long antedated by the same combination by Robert Brown, a writer whose works the reforming botanists can scarcely afford to overlook.

It will be generally admitted that a system of nomenclature is unsatisfactory in which the botanist who characterizes and names a new species with all due care that he is not duplicating an existing name, nevertheless can not be at all sure but that the name so carefully chosen may at once be displaced through no fault of his. Yet such is the case under the Rochester and Madison rules. When Nuttall made the combination *Chrysopsis pilosa*, it was a new binomial applied to a good new species evidently belonging to the genus under which it was placed, and never before described in this or any other genus. Can any author hope in describing a species in the future to do better than this? Under the long established usage of conservative botanists such a name would be inviolable; under the Madison rules, however, Prof. Britton is able to displace it by combining the same specific name to the same generic but to designate an entirely different plant, namely *Chrysopsis pilosa* Britton (*Erigeron pilosa* Walt.), making thereby a most useless and pernicious synonym of Nuttall's name, which has every right to stand.

It is not the special case that is here important, but the general principle, which permits such changes and will continue to permit them in the future. The upheaval of nomenclature under this law will not cease even when most of the obscure names of the past have been sought out. It will always be possible for a botanist through perfectly conscientious work to readjust generic lines so that species of the same specific name are thrown together. In such cases under the prevalent usage that species which was already under the genus retained stands fast. But according to the Madison rule, as we have just seen, if the species brought into the genus chances to have an older specific name than the species already in the genus, both plants are to be re-named instead of only one. It does not seem to have occurred to the reformers that this ruling, far from being conducive to stability, would,

especially when combined with another of their dicta, give perpetual opportunity for change, since it will always be possible for an erratic botanist to throw together large genera like *Aster* and *Erigeron*, *Bidens* and *Coreopsis*, *Panicum* and *Paspalum*, thereby displacing many specific names which according to the rule of "once a synonym always a synonym" can never be revived! This outcome seems so preposterous that it must be stated that it is not merely the writer's own unauthorized interpretation but the distinctly expressed although unpublished view of one of the compilers of the list, who has been among the foremost in the cause of nomenclature reform.

It is impossible here to criticise in detail the bibliographical work in the list. It is well known that it has been done gratuitously by those who, pressed with other duties, could ill afford the time, so that slips may well be overlooked. Nevertheless it must be confessed that it is disappointing to find such obvious evidences of haste, not to say carelessness, in this regard. Why, for instance, should *Iodanthus pinnatifidus* be ascribed to Prantl when it was used long ago in Steudel's *Nomenclator* (with synonym), again by Gray in the Proceedings of the American Academy, again by Watson in the Botany of the King Expedition? The fact that Prantl himself was ignorant of these earlier publications is but a poor excuse for an American botanist well armed with Watson's *Bibliographical Index* or the recently issued *Index Kewensis*, in both of which the combination is cited. Or why should the place of publication of Celokowski's genus *Stenophragma* be given as *Æsterr. Bot. Zeitschr.* 27: 177, where there is merely a review by Dichtl of Celokowski's *Flora von Böhmen*, while the publication of the genus was not even in this latter work, but some years before in the *Regensburg Flora*? However, every one should be aware of the great difficulty of freeing such a list from errors of this kind.

A more significant fact in regard to the work is the number of changes of name which have resulted from readjustments of generic lines and from a modified conception of the dignity of the species. It cannot fail to strike the botanist who glances over this list that many of its species are founded upon plants which by such experienced botanists as Hooker, Gray, Watson, and others have generally been regarded as varieties. Of course it is not denied that the reverse case often obtains. A corresponding change (and here a distinct depreciation) in the dignity of the variety is shown by Prof.

Britton's many "albifloras," covering forms of which Dr. Gray, in a letter recently published, wrote: "When the new edition of the Manual comes out it will have a *nota bene*: Expect a white-flowered state of every colored species. They are sure to turn up sooner or later. And I find it no good therefore to say var. *alba* over and over." If it should be urged that, upon the basis of former publications, *Gerardia purpurea albiflora* Britton, *G. tenuiflora albiflora* Britton, *Gentiana Andrewsii albiflora* Britton, etc., are to be regarded merely as forms and not as varieties, it may be asked whether the trinomial system adopted in the list has not a considerable defect if it cannot indicate the difference between a well-marked variety and a mere form. Whether the naming of forms is at present desirable may well remain an open question, but there can be no doubt that such a course is a general tendency of exhaustive systematic study, and accordingly a style of nomenclature in which there is no distinction between subspecific, varietal, and formal differences is likely to appear to future botanists a rather clumsy tool. However, to return to the interpretation of groups, I would not be taken as even hinting that every botanist has not a perfect right to put his own construction upon the limits of genera, species, and varieties. But it should be apparent to those sanguine supporters of reform, who hope to derive stability from it, that here again everything depends upon individual judgment and must always do so.

In the light of what has been said, it seems sufficiently evident that the new system, far from furnishing a satisfactory solution to the nomenclature question, fails even to offer such substantial advantages over the existing system as greater clearness and prospect of permanency, for which alone working botanists could afford to make such sweeping changes in their language. It is readily granted that the Rochester and Madison rules were formed with care, and with earnest hope of securing uniformity. But they represent what may be expected of rigid codes. Exact rules cannot be consistently applied to such varying circumstances without leading to many incongruities, especially when such action is made retrogressive. It is worthy of note that even Dr. Kuntze, who has certainly made the greatest effort to be consistent, has recently objected strenuously to the principle of "once a synonym always a synonym," expressing grave doubts whether after all several hundred genera and some thousands of species should be renamed on account of rules invented long after their publication.

Uniformity, consistency and stability of nomenclature are in the opinion of the writer unattainable. The sanction of particular associations will never make rules able to control all authors. There will, it is true, be those whose sanguine ideas lead them to follow with conscientious zeal a proposed new system; there will also be those who, however unpopular they may make themselves, will hesitate to change to what they are confident cannot be permanent; and there will always be a third class, who at once set about modifying and improving the measures proposed. This third element is of course the serious obstacle to successful reform, since its existence dispels all hope of a permanent system. It will be remembered in this connection that within a year after the Madison convention a prominent radical member, who assisted in framing the Madison rules, was publishing extensively upon an entirely different system.

While this view of nomenclature may seem unduly pessimistic it may be said in its justification that there is a much more important quality of nomenclature than stability and consistency, namely that of ready intelligibility. It has of late been the fashion among the reforming botanists to decry the existing nomenclature as hopelessly involved and confused. Strangely enough this cry comes quite as often from the physiologist and anatomist as the systematist. It arises, however, in great part at least, from a misapprehension, since the working monographer, who is studying the plants themselves, is seldom seriously troubled in understanding the nomenclature of former writers. The difficulties which confront him are much more those of variation in plants, fragmentary types or insufficient description, etc., and not those of nomenclature pure and simple. Nor has the writer of today any difficulty in conveying accurately his ideas of plant relationship through the medium of the existing nomenclature. For instance no writer using the well established name *Calycanthus* could be misunderstood, while the names *Beurera*, *Butnera*, and *Büttnera*, recently advanced for the genus, never can be more intelligible than the one in use, and the very fact that these three names have within as many years been successively brought forward, each as the only correct designation of the genus, affords little encouragement to think that any one of them is likely long to replace the old and familiar name.

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